

3.0 ALTERNATIVES AND CUMULATIVE PROJECTS

3.1 FACTORS USED IN SELECTION OF ALTERNATIVES

3.1.1 Alternatives Development and Screening Process

One of the most important aspects of the environmental review process is the identification and assessment of reasonable alternatives that have the potential for avoiding or minimizing the impacts of a proposed project. In addition to mandating consideration of the No Project Alternative, the State California Environmental Quality Act (CEQA) Guidelines (section 15126.6(d)) emphasize the selection of a reasonable range of feasible alternatives and adequate assessment of these alternatives to allow for a comparative analysis for consideration by decision-makers.

The CEQA requires consideration of a range of reasonable alternatives to the project or project location that: (1) could feasibly attain most of the basic project objectives; and (2) would avoid or substantially lessen any of the significant impacts of the proposed Project. An alternative cannot be eliminated simply because it is more costly or if it could impede the attainment of all project objectives to some degree. However, the State CEQA Guidelines declare that an Environmental Impact Report (EIR) need not consider an alternative whose effects cannot be reasonably ascertained and whose implementation is remote or speculative. The CEQA requires that an EIR include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed Project.

This screening analysis does not focus on relative economic factors of the alternatives (as long as they are feasible) since the State CEQA Guidelines require consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may “impede to some degree the attainment of project objectives or would be more costly.” Likewise, the question of market demand or project need is not considered.

3.1.2 Alternatives Screening Methodology

Alternatives to the proposed Shell Martinez Marine Terminal Lease Consideration Project (Project) were selected based on the input from the Applicant (Equilon Enterprises LLC, doing business as [dba] Shell), the EIR study team, and the public and local and State jurisdictions during the EIR scoping hearings and agency consultations. The alternatives screening process consisted of three steps:

Step 1: Define the alternatives to allow comparative evaluation.

Step 2: Evaluate each alternative in consideration of one of more of the following criteria:

- The extent to which the alternative would accomplish most of the basic goals and objectives of the Project;

- The extent to which the alternative would avoid or lessen one or more of the identified significant environmental effects of the Project;
- The potential feasibility of the alternative, taking into account site suitability, economic viability, availability of infrastructure, General Plan consistency, and consistency with other applicable plans and regulatory limitations; and,
- The requirement of the State CEQA Guidelines to consider a “no project” alternative and to identify, under specific criteria, an “environmentally superior” alternative in addition to the “no project” alternative (CEQA Guidelines, section 15126.6(e)).

Step 3: Determine suitability of the proposed alternative for full analysis in the EIR. If the alternative is unsuitable, eliminate it, with appropriate justification, from further consideration.

Feasible alternatives that did not clearly offer the potential to reduce significant environmental impacts and infeasible alternatives were removed from further analysis. In the final phase of the screening analysis, the environmental advantages and disadvantages of the remaining alternatives were carefully weighed with respect to potential for overall environmental advantage, technical feasibility, and consistency with project and public objectives.

If an alternative clearly does not provide any environmental advantages as compared to the proposed Project, it is eliminated from further consideration. At the screening stage, it is not possible to evaluate potential impacts of the alternatives or the proposed Project with absolute certainty. However, it is possible to identify elements of the proposed Project that are likely to be the sources of impact. A preliminary assessment of potential significant effects of the proposed Project resulted in identification of the following impacts:

- Operational Safety/Risk of Accidents;
- Water Quality;
- Biological Resources;
- Commercial and Sports Fisheries;
- Land Use/Recreation (oil spill impacts);
- Air Quality;
- Noise;
- Vehicular and Rail Transportation;
- Visual Resources (oil spill impacts);
- Cultural Resources;
- Geological Resources/Structural Integrity of Shell Terminal; and,
- Environmental Justice.

For the screening analysis, the technical and regulatory feasibility of various potential alternatives was assessed at a general level. Specific feasibility analyses are not needed for this purpose. The assessment of feasibility was directed toward reverse reason, that is, an attempt was made to identify anything about the alternative that would be infeasible on technical or regulatory grounds. The CEQA does not require elimination of a potential alternative based on cost of construction and operation/maintenance. For the proposed Project, those issues relate to:

- Engineering feasibility and feasibility of implementation;
- Reasonableness when compared to other alternatives under consideration; and,
- Adequacy of the alternative to meet the Project purpose and need.

3.1.3 Summary of Screening Results

Potential alternatives were reviewed against the above criteria. A number of alternatives were eliminated based on their inability to meet the basic Project objective, which is:

To maintain the operation and viability of the Shell Martinez Refinery by continuing current Shell Martinez Marine Terminal (Shell Terminal) operations through which the Refinery both receives its raw materials and exports its refined products. The Project is needed in order to continue Refinery operations. Without the use of the Shell Terminal, the Refinery would not be viable and would eventually be shut down (see Section 1.1, Project Objectives, Purpose, and Need).

Those alternatives that were found to be technically feasible and consistent with the Applicant's objectives were reviewed to determine if the alternative had the potential to reduce the environmental impacts of the proposed Project.

Table 3.1-1 represents the evaluation and selection of potential alternatives to be addressed in this ~~Draft~~ EIR. Those listed in the first column have been eliminated from further consideration (see rationale in Section 3.2, Alternatives Eliminated from Full Consideration), and those in the second column are described in Section 3.3, Alternatives Evaluated in this ~~Draft~~ EIR, and evaluated in detail in Section 4.0, Existing Environment and Impact Analysis.

Table 3.1-1. Summary of Alternative Screening Results

Alternatives Eliminated from Consideration	Alternatives Evaluated in this EIR
<ul style="list-style-type: none"> • Land-Based Transportation Alternatives for Continued Operation of Upland Facility • Increased Use of San Joaquin Valley (SJV) Crude Pipelines for Transfer of Crude and Product • Consolidation Terminal • Deep Water Port Consolidation • Limitations of <u>Shell</u> Terminal Use • <u>Alternative Lease</u> Options 	<ul style="list-style-type: none"> • No Project • Expanded Pipeline <u>Full</u> Throughput Alternative

It should be noted that this ~~Draft EIR alternatives~~ analysis included alternatives that potentially would result in greater environmental impacts to some issue areas, or would transfer a similar level of environmental impacts to other existing marine terminal facilities, as compared with the proposed Project. These alternatives have been included for analysis to demonstrate that, regardless of lease renewal, similar levels of

impacts may occur in meeting the refining needs of the Bay area region by increased activities at other Bay area marine oil terminals (MOTs) and associated refineries.

3.2 ALTERNATIVES ELIMINATED FROM FULL EVALUATION

3.2.1 Land-Based Transportation Alternatives for Continued Operation of Upland Facility

Land-based alternatives to the use of marine tankers at the Shell Terminal include rail cars and trucks. There is a rail line into the Shell Refinery facility, but the handling facilities, while permitted, have not been built. As shown in Table 2.2-1 in Section 2.0, Description of the ~~P~~roposed Project, the Shell Terminal throughput has ranged from 13 to 24 million barrels per year (bpy) (35,616 to 65,752 barrels per day [bpd]) over the past five years. Since the average rail car holds 700 barrels (bbls), between up to 94 rail cars per day would be required to make up the difference without the Shell Terminal. Note that as-if the amount of bpd increased over the lease period, so would the number of required rail cars. This alternative would entail construction of expanded rail handling facilities at the Refinery. The major drawback of rail as an alternative method of transferring crude/product is the time and labor needed to fill barrels, load them onto rail cars, ship them to end point users, unload the rail cars, and unload the barrels. Although economics are not evaluated, this alternative costs much more over the long term than the alternatives of utilizing existing pipelines or of modifying existing pipelines.

A minimal number of trucks deliver materials to the Shell Terminal. While the Refinery does have truck deliveries, the additional number of trucks that would be required for transfer of product and import crude would exceed the capacity of the local roadway system that provides access to the Refinery. And, as above, use of trucks would be labor extensive.

Due to the time and labor involved with the use of rail and truck, and limitations on roadway capacity for trucks, land-based transportation by trail and rail is considered infeasible and has been eliminated from further consideration.

3.2.2 Increased Use of San Joaquin Valley (SJV) Crude Pipelines for Transfer of Crude and Product

Currently, two pipelines deliver crude oil from the SJV to the Shell Refinery. Shell does not own these pipelines, but leases capacity for oil transfers along with other area refiners. These pipelines historically have provided the majority of the crude oil used at the refinery. However, the SJV crude oil fields continue to decline in production. Hence, the amount of SJV crude provided via these two pipelines to the refinery continues to decline. A corresponding increase in crude oil wharf receipts is occurring to offset the decline in SJV crude availability. In terms of future scenarios, the likelihood is that use of the SJV crude pipelines will decrease as the SJV crude fields decline in production. Thus, use of SJV crude pipelines to make up the difference for lease denial of the Shell Terminal is infeasible and has been eliminated from further consideration.

3.2.3 Consolidation Terminal

A potential alternative to the proposed future use of the Shell Terminal is a consolidated MOT where petroleum and product is offloaded and onloaded at a central facility and delivered to and from refineries, storage terminals, and other facilities in the Carquinez Strait and east San Francisco Bay area via smaller marine vessels or pipelines. The Draft EIR/Environmental Impact Statement (EIS) for the San Francisco to Stockton Phase III (John F. Baldwin) Navigation Channel Project (U.S. Army Corps of Engineers 1997) presented the Richmond Marine-Link Pipeline System (RMLPS) as an alternative to channel deepening and continued dredging within San Pablo Bay and Carquinez Strait. This RMLPS proposal was withdrawn by its proponent, Wickland Pipelines LLC, in February, 1999, due to a lack of potential user participation.

The RMLPS was proposed as a consolidated facility ~~whereby petroleum would be offloaded at a central facility and delivered to refineries, storage terminals, and other facilities in the east San Francisco Bay Area via smaller marine vessels or pipeline.~~ The pipeline systems associated with the RMLPS were intended to provide flexibility in the areas of cargo handling and transportation cost control, reduce vessel-to-vessel lightering of crude oil at Anchorage 9, and reduce tanker traffic in the greater San Francisco Bay and Carquinez Strait. This would have been possible because the pipeline system would have allowed tankers of up to 300,000 Dead Weight, Long Tons (DWT) to proceed at high tide (when ships drafting 48 to 49 feet can pass through the 45-foot-deep channel to Richmond) to the new RMLPS marine terminal and off-load in the natural 53- to 55- foot depths of the berth at a new deep-water wharf.

The west end of the RMLPS pipeline would have commenced within the Richmond City limits at a new deep-water wharf to be constructed at Point Molate, north of the Chevron Richmond Long Wharf. The pipeline would have connected to a new tank farm on the San Pablo peninsula, either at Point San Pablo or Point Orient, and continued in northerly then easterly directions along the shorelines of San Pablo Bay and Carquinez Strait, terminating in Pittsburgh at the existing Pacific Gas & Electric (PG&E) power plant tank farm.

As compared to use of other existing Bay Area MOTs for replacement of the Shell MOT (see Section 3.3.2, below), the RMLPS consolidated terminal, as a new facility, would have generated a greater number of environmental impacts in the Point Molate area. In comparison with the Shell alternatives, potential impacts would be transferred from Shell to that new location. Also, with both the RMLPS and Long Wharf operating proximate to each other, consideration would need to have been given regarding the potential for increased risk in vessel collisions. Because the RMLPS is no longer a viable option for a new Bay Area terminal, and because there is a potential for a greater risk of significant environmental impacts, the RMLPS consolidated terminal has been eliminated from further consideration as a viable alternative.

3.2.4 Deep Water Port Consolidation

The concept of an offshore port located outside of the Bay was also considered. This would involve development of a port several miles off the California coastline to minimize the potential for spills that would impact shorelines, and to reduce the number of tankers entering U.S. ports and related risks of environmental damage. One such offshore terminal, the Louisiana Offshore Oil Port (LOOP), operates in deep water 18 miles offshore. This facility became operational in 1982 (U.S. Department of Interior 1990). The port consists of three single-point mooring buoys used for the offloading of crude tankers and a marine terminal consisting of a two-level pumping platform and a three-level control platform.

While such concepts appear to have potential to reduce near-shore tanker accidents, significant questions remain unanswered as to the environmental and economic benefits of these facilities offshore the coast of California. As such, this concept was eliminated from further analysis as an alternative in this Draft EIR.

3.2.5 Limitations of Shell Terminal Use

Options examined under this scenario include limitations on Shell Terminal use. These include crude/product receipt only, product shipment only, and emergency use only. Crude/product receipt and product shipment both assume retention of existing capacities. Reduced use of the Shell Terminal would decrease the risk of spills, but not necessarily proportionately to the decrease in vessels calls or throughput. The Shell Terminal and pipelines would still present a continuous potential for a pipeline spill release. In addition, the method used to replace the throughput (pipelines with connections to other terminals) could shift the risk to another terminal.

For consideration of emergency use only, the Shell Terminal would be retained with all equipment operations. Under emergency conditions, use of the Shell Terminal would be restricted for use by any tanker or barge that would require unloading of its contents. However, it would also be difficult to maintain the existing level of training and experience of personnel now working at the Shell Terminal, as well as raise questions on who would maintain and operate such a facility.

These options were eliminated as infeasible. It is unlikely that the Shell Terminal would not be able to operate efficiently or economically, nor would there be any environmental benefit gained by limiting usage to import or export only, or only to emergency use.

3.2.6 Alternative Lease Options

Alternative Lease Option 1

Two alternative lease options were considered. The first would involve granting of a short-term lease to Shell, in the event that Shell would phase out its operation of the Shell Terminal. If the Shell Terminal is not granted a new lease, then limitations would

occur under the conditions imposed on Shell under a phase out lease. The alternatives considered in this document are designed to focus on avoiding or substantially lessening any significant effects of the pProject, but to still meet project objectives that allow the Refinery to continue to operate. With a phase out of operations of the Shell Terminal, Shell would be required to find another source of crude receipt and product export to keep the Refinery operating. This is similar to the No Project Alternative, except that Shell would be granted a specific phase out period and conditions under a lease, rather than having no lease as under the No Project discussion. The terms under which the CSLC would implement a phase out of operations would need to be specifically developed for this facility, as such, discussion of a short-term lease is not considered further in this document.

Alternative Lease Option 2

The second option would involve granting a lease of the Shell Terminal site to another marine operator, if Shell and the CSLC were unable to agree on new lease terms. However, problems of Shell's ownership of the Shell Terminal and infrastructure could arise. Also, the problem of logistics of transfer/transport of crude and product through the Refinery to another refinery could result. Finally, CSLC leases reserve the right for CSLC to have ~~their~~its property returned in original condition or with the improvements intact, and a new lease between the new operator and CSLC would be required. This alternative would result in the same impacts as the proposed Project with additional impacts to transport throughput by pipeline to another refinery. This alternative was eliminated from further consideration.

3.3 ALTERNATIVES EVALUATED IN THIS DRAFT EIR

3.3.1 No Project Alternative

Under the No Project Alternative, Shell's lease would not be renewed and the existing Shell Terminal would be subsequently decommissioned with its components abandoned in place, removed, or a combination thereof. The decommissioning of the Shell Terminal would be governed by an Abandonment and Restoration Plan. Decommissioning of the Shell Terminal would include, but not be limited to, the following actions:

- Magnetic survey of seafloor, multi-beam survey and/or side scan sonar;
- Abandon and/or remove all Shell Terminal components above and below the seafloor, including pipelines;
- Site Clean-up Verification using such means as side scan sonar, remotely operated vehicles and video; and,
- Completion of a Phase 1 Site Assessment (and more detailed Assessment if needed) ~~will be conducted~~. Based on the results, a Site Closure Plan will be prepared for approval by appropriate agencies.

Under the No Project Alternative, an alternative means of crude oil/product transportation would need to be in place prior to decommissioning of the Shell Terminal, or the operation of the Refinery would cease production, at least temporarily. It is more likely, however, that under the No Project Alternative, Shell would pursue alternative means of traditional crude oil transportation such as a pipeline transportation or use of a different marine oil terminal. Accordingly, the potential environmental impacts of these alternatives are described and analyzed in this ~~Draft~~ EIR. For the purposes of this ~~Draft~~ EIR, it has been assumed that the No Project Alternative would result in a decommissioning schedule that would consider implementation of one of the described transportation alternatives. Any future crude oil or product transportation alternative would be the subject of a subsequent application to the CSLC and other agencies having jurisdiction depending on the proposed alternative.

Decommissioning, abandonment, and/or deconstruction of the Shell Terminal or any other proposed reuse of the Shell Terminal would require a separate CEQA review. Since details associated with decommissioning, abandonment, and/or deconstruction would need to be developed if they were to occur, for the purposes of this ~~Draft~~ EIR, impacts are discussed only briefly.

3.3.2 Full Throughput Alternative

The Shell Refinery is part of the greater Bay Area refining industry, and the. ~~The future demand for crude oil at the nearby refineries is not expected to decrease. With This alternative assumes that there would be no Shell MOT, wharf to receive crude or transport product and, therefore, that~~ Shell Refinery operations would be dependent on crude oil receipts through pipelines via connected to other Bay Area MOTs in order to meet regional refining demands. This would be required to continue to provide the daily throughput capacity to the Shell Refinery and meet regional refining demands.

~~Required modifications of the existing terminals would be subject to substantial environmental review and local permitting, which is considered briefly within the resources analyses in Section 4.0 of this Draft EIR.~~

~~This alternative assumes that with no Shell MOT wharf to receive crude or transport product, pipelines would be used via connection to other Bay Area terminals to provide the daily throughput capacity to the Shell Refinery.~~

This could occur through several sources:

- Shell currently transfers some petroleum through the nearby Pacific Atlantic Plains Product Terminals LLC (formerly Shore and Pacific Atlantic) Terminals (a storage only facility) via pipeline. There may be some ability to increase storage capacity at the Pacific Atlantic Plains Product facility and transfer petroleum to the Shell Refinery.
- Shell has two San Joaquin Valley pipelines in which it leases capacity for transfers from other Bay Area refiners. As a partial solution, if the Shell Terminal

were inoperable, the Shell Refinery may be able to increase use of these pipelines, expand existing storage capacity at other refineries, or increase pipeline capacity.

- Shell ~~recently purchased~~ owns a pipeline that extends from the Richmond area to Antioch via Martinez. Currently, the end of the pipeline in Richmond goes to a demolished wharf facility. Hence, a portion of this pipeline, in combination with new pipelines, would be required for connections between other Bay Area terminals and the Shell Refinery.

Construction of new or modified pipelines would be required to equal the projected maximum of 50,000,000 bpy (137,000 bpd) of crude receipts through the Shell Terminal to the Shell Refinery. Pipelines capable of handling this capacity may be viable from an environmental perspective. However, prior to construction and use of any new pipelines, lengthy and complex regulatory processes, land availability and obtainment of easements or rights-of-way would be required, ~~and~~. In general, any modifications to other Bay Area MOTs would require that substantial environmental review and local permitting would be conducted. Since specific modifications are assumed on a general basis, brief analyses are presented in Section 4.0 of this ~~Draft~~ EIR.

3.3.3 Environmentally Superior Alternative (Summary)

The State CEQA Guidelines section 15126.6 (e)(2) states:

The "no project" analysis shall discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services. If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." (Emphasis added.)

The EIR's Environmentally Superior Alternative is discussed in Section 5.5, after the analyses of potential significant environmental effects associated with the proposed Project have been addressed (see Sections 4.0 through 4.12).

3.4 CUMULATIVE RELATED FUTURE PROJECTS

This discussion provides a listing and map identifying other related future projects near the location of the proposed Project and Alternatives.

Section 15130 of the State CEQA Guidelines requires that an EIR discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as identified in section 15065(c). Where a lead agency is examining a project with an incremental effect that is not "cumulatively considerable," a lead agency need not consider that effect significant, but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable. As defined in Section 15355 of the

State CEQA Guidelines, a cumulative impact consists of an impact that is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts. An EIR should not discuss impacts that do not result in part from the project evaluated in the EIR.

3.4.1 Boundary of Cumulative Projects Study Area

The study area for the proposed Project includes the San Francisco – San Pablo Bay region (the Bay or Bay Area), Carquinez Strait, and the outer coast of California (refer to Section 1.2.2, Study Area Boundary). Because the geographical region that could be affected by the proposed Project is the same, the cumulative projects study area coincides with the Project study area, and is comprised of the following components presented in Section 3.4.2, Description of Cumulative Projects:

- Foreseeable projects in the general vicinity of the Shell Terminal; and,
- Projects in or near the shipping lanes, utilized by other carriers, not only for petroleum but for transport of other goods and materials within the Carquinez Strait, San Pablo Bay, and San Francisco Bay.

Most vessel traffic in the study area is not the responsibility of Shell. However, these vessels could have an accidental spill/release of oil in the Bay or outer coast en route to the Shell Terminal. A general overview of cumulative impacts is presented in Section 4.0, Existing Environment and Impact Analysis within each environmental discipline. Cumulative impacts on the coast area from San Francisco Bay north to the Oregon/California border and south to Santa Cruz were previously addressed in the Shore Terminals, LLC, Lease Consideration EIR (Chambers Group 2004) and for consideration of a new lease for the Unocal (now ConocoPhillips) Marine Terminal (Chambers Group 1994). Cumulative impacts relevant to tanker traffic on the shipping lanes from San Francisco Bay south to southern California were previously addressed in the GTC Gaviota Marine Terminal Project Final Supplemental EIR/EIS (Aspen Environmental Group 1992). The identification and analyses of cumulative outer coast impacts possible from outer coast shipping discussed by these documents, though dated, are still relevant, and, in the discussion of impacts associated with the proposed Project, comparable and current for this analysis.

A description of the regional characteristics of transport in the Bay Area and outer coast is presented in Section 3.4.3, Regional Characteristics of Crude/Product in Bay and Along Coastal Shipping Lanes off Northern California.

3.4.2 Description of Cumulative Projects

Projects in Vicinity

Martinez Marina

The Martinez Marina and Yacht Club is located immediately west of the Shell facility. The Yacht Club offers facilities including a dining area, outdoor seating with a view of

the Carquinez Strait, full service bar, kitchen, guest showers, and gazebo with a barbeque and dance floor. The city of Martinez plans several improvements to the Marina over the next several years, including: dredging of approximately 35,000 cubic yards from the Marina; replacement of boat docks and bulkhead; work currently pending negotiations with contractor; and construct improvements for a ferry landing. However the project presently has no start or completion dates (According to the City's website, www.cityofmartinez.org/depts/community/special_projects/marina.asp (May 19, 2011):

For more than 40 years the Martinez Marina has been supporting boating and fishing enthusiast. In 1993 a Marina Master Plan was adopted by the City that called for upgrading and replacing the marina. Plans included a new boat launch ramp, deeper water channels for the boats in the marina, new bait shop, boat storage, waterfront restaurant and more. Marina progress to date includes, removal of the old ferry pier, construction of the Ferry Point Plaza, new boat launch and initial dredging of the marina entrance. The next phase will include more dredging, break water wall repair and entrance reconfiguration. This is a multi-phase project that will take place over the next several years and is contingent upon the availability of public and private funding.

San Francisco Bay to Stockton Phase III – John F. Baldwin Navigation Channel Project

This project is a 65-mile long deep draft navigation channel, extending from the San Francisco Bay entrance to the Port of Stockton, through San Francisco, Marin, Contra Costa, Solano, Sacramento, and San Joaquin Counties in California. The Port of Stockton, supported by the Contra Costa County Water Agency, has requested that the USACE perform an assessment of the feasibility of deepening the existing 35' channel.

The USACE and Port of Stockton executed a Pre-construction, Engineering and Design (PED) Agreement in July 2002, initiating the first phase of channel deepening, which focuses on potential salt water intrusion issues and reviewing project economics. As a result of this evaluation, the Port and the USACE found sufficient evidence to support the continuation of the study and the initiation of a General Reevaluation Report (GRR), and executed a revised PED Agreement in April 2004. The Central Valley Regional Water Quality Control Board (RWQCB) has placed severe restrictions on all dredging activities occurring within the Delta - restrictions which, if unchanged, will make the project all but impossible to construct, as well as perform operations and maintenance on the built 35' Channel project. In an attempt to counter these restrictions, the USACE is calling on its nation-wide expertise in dredging and water quality to convince the Board that dredging can be beneficial to both the nation's economy and the environment, while not causing detrimental impacts to the water quality of the Delta.

The USACE goals currently are, contingent on funds, to continue preparation of the GRR and Supplemental EIR/EIS, which are being prepared to review the existing designs, revise the project economics, reassess the dredge disposal sites, and update the environmental documentation (U.S. Army Corps of Engineers Website, San Francisco District 2005).

The purpose of the channel deepening is to provide improved direct access of large oil tankers to the petroleum refineries and terminals adjacent to the Carquinez Strait. This would reduce vessel-to-vessel lightering of crude oil at Anchorage No. 9 and reduce tanker traffic in San Francisco Bay. ~~Once dredging and disposal for the channel deepening project begins, the project should take approximately 30 months to complete. The USACE is reevaluating the project to determine the extent to which changes to channel dimensions are warranted (USACE, San Francisco District website, www.spn.usace.army.mil/projects/stockton_navigation/ (last updated, March 24, 2008).~~

Mare Island Reuse

Mare Island is located on the western edge of the city of Vallejo in southwestern Solano County. Established in 1854, Mare Island Naval Shipyard was the first naval facility on the Pacific Coast. Mare Island is approximately 3.5 miles long and one mile wide, and occupies approximately 5,460 acres of which 1,650 acres are developed uplands. Tidal and non-tidal wetlands comprise the remaining acreage. Mare Island has approximately 960 buildings that comprise about 10.5 million square feet of industrial, office, residential, commercial, and recreational facilities. The Mare Island naval facility was transferred to the city of Vallejo in May 2002. Conversion of the Mare Island Naval Shipyard and related properties from military to civilian use continues under the direction of the city's economic development division (see, Mare Island Specific Plan [City of Vallejo 2007] at www.ci.vallejo.ca.us/uploads/155/Mare%20Island%20Specific%20Plan.pdf)—Website: www.ci.vallejo.ca.us/GovSite/ September 2005). This project continues.

San Francisco Bay Trail

The San Francisco Bay trail offers a nearly 300-mile shoreline trail around San Francisco Bay. However, the Bay trail project is not completed yet, and projects still continue today. Once completed, the Bay Trail will consist of a 400500-mile recreational corridor encircling the Bay area, and connecting all nine counties of the Bay; approximately 310 miles of the alignment, more than 60 percent of the Bay Trail's ultimate length, have been completed (<http://baytrail.abag.ca.gov/overview.html>; viewed May 19, 2011). Bay trail extension grants were awarded in 2001 in the vicinity of the Shell terminal. These included a grant of a 0.53 mile trail alignment in the City of Martinez and a grant for the Feasibility Study for Carquinez Scenic Drive. In a Gap Analysis Study, completed in 2005, the San Francisco Bay Trail Project identified areas where trails could be expanded with an anticipated project completion date of 2020 for all planned trails and gap segments. In the city of Martinez, two gap segments are planned to be completed in the short-term time span (approximately five years), while one larger project is planned for the long-term time span (approximately 15 years) (San Francisco Bay Trail Website: <http://baytrail.abag.ca.gov/> September 2009).

San Francisco Bay Area Water Trail Plan

~~A DEIR was completed in June 2008. The State Coastal Conservancy Board certified and adopted a Final EIR on March 17, 2011 for the San Francisco Bay Area Water Trail~~

Plan in which a network of water trails would be formalized including increased access sites and “trailheads” for water activities. Not only would existing trailheads be included in the project, the ~~D-Final~~ Final EIR examined the possibility of trail enhancements and the development of new trailhead sites. These sites are located throughout the San Francisco Bay, including Carquinez Straight and Suisun Bay. (See <http://scc.ca.gov/2010/07/30/san-francisco-bay-area-water-trail/>, updated March 21, 2011.)

Projects In or Near Bay Area Shipping Lanes

Long-Term Management Strategy (LTMS) Program

The LTMS program is designed to provide a regional plan for the disposal of dredged material from the San Francisco Bay over the next 50 years. The LTMS program began in January 1990 as a federal/state partnership among the four agencies that have regulatory authority for dredged material in the San Francisco Bay, and include the USACE, the EPA Region IX, the San Francisco Bay Regional Water Quality Board (SF-RWQCB), and the San Francisco Bay Conservation and Development Commission (BCDC). These four lead agencies share responsibility for managing the various components of the LTMS. The LTMS Final EIR/EIS indicates that approximately 6 million cubic yards (mcy) of sediments must be dredged and disposed each year from shipping channels and related navigational facilities in the Bay Area. The estimated total volume of dredged material that would require disposal over the 50-year LTMS planning horizon is approximately 300 mcy. The policy alternatives involve different volumes of dredged sediment being disposed at in-Bay, ocean, and upland/wetland reuse sites. Under current regulatory conditions, 80 percent or more of the dredged material would continue to be disposed at designated sites in the Bay, with only a small percentage of material disposed outside the estuary at the new offshore ocean site or used in “beneficial reuse” applications, such as wetlands restoration.

Oakland Harbor 50-Foot Deepening Project

In September 2009, the Port of Oakland, USACE, and State Coastal Conservancy announced the substantial completion of the -50 Foot Oakland Harbor Deepening Project. More than 12 mcy of sediment was removed to deepen the Harbor, thus allowing larger container ships to access the Port “24/7” (see press release at www.portofoakland.com/newsroom/pressrel/view.asp?id=183, September 18, 2009). Oakland Harbor is located in the city of Oakland, on the eastern shore of central San Francisco Bay, immediately south of the San Francisco-Oakland Bay Bridge. Oakland Harbor is the second largest port on the West Coast and the fifth largest container port in the nation. ~~The project proposes to deepen the federal channels of the Oakland Harbor and Port-maintained berths from 42 feet to depths of 50 feet. Approximately 12.8 mcy of sediment will be dredged for this project and used to create environmental enhancement and wetland habitat at the Middle Harbor Enhancement Area (MHEA), the Hamilton Army Airfield Wetlands Restoration project (HWRP), and the Montezuma Wetlands Restoration project (MWRP).~~

Two contracts were completed in 2005, the construction of the MHEA Containment Structure and Phase 3B/C, which will dredge and dispose material from the Outer and Inner Harbors at the MWRP site, and the MHEA site. This phase will deepen the Oakland Harbor to -46 feet. The second phase of construction in the Inner Harbor Turning Basin, Phase 1B, began in 2005 and was completed in 2006. After construction on Inner Harbor Phase 1B is completed, a new contract, Phase 3D/E, which will dredge and dispose of material at the HWRP site and the MWRP site, will begin in 2006. This phase will deepen the Oakland Harbor to the authorized project depth of -50 feet. Phase 3D was expected to be completed in September 2007, while phase 3E outer harbor dredging was expected to be completed in October 2007. Phase 3E inner harbor dredging was expected to begin November 2007.

Point Molate Reuse Project

Pointe Molate Naval Fuel Depot (NFD) is located on the San Pablo Peninsula, approximately 1.5 miles north of the Richmond-San Rafael Bridge in the city of Richmond, California. Point Molate covers approximately 412 acres in the Potrero Hills along the northeastern shore of San Francisco Bay. The San Pablo Peninsula is the land mass between San Pablo Bay and San Francisco Bay. The facility occupies approximately 1.6 miles of shoreline and its property extends into adjacent hillsides up to the top of the San Pablo ridge. Topography ranges from flat, filled areas (reclaimed tidal areas) near the Bay to steep, dissected slopes of nearly 500 feet in elevation. The facility is bordered on the north, south, and east by the Chevron Richmond Refinery. The facility is bordered on the west by San Francisco Bay. In 1995, Point Molate was listed for closure and disposition under the Defense Base Closure and Realignment Act (BRAC) of 1990. The facility operationally closed on September 30, 1998.

In November 2004, the Guidiville Band of Pomo Indians, and Upstream Point Molate LLC, which is working with Harrah's and the Guidiville Band of Pomo Indians on a hotel-casino resort, entered into an agreement with the city of Richmond to develop the site. The development project will reflect the goals and objectives of the Point Molate Base Reuse Plan by including a range of hospitality, retail, entertainment and recreation uses, while providing job and revenue generation for the city of Richmond. The project will include a balance of development and open space on the property. The project will feature first class destination resort and gaming facilities, together with approximately 150,000 square feet of indoor related showroom entertainment and conference space, 1,100 hotel rooms and approximately 300,000 square feet of retail space, together with public-serving uses, park and open space and pedestrian, bicycle and vehicular access and circulation. Retail uses will be organized into a pedestrian village inland from and parallel to the shoreline, leaving a generous park and Bay Trail alignment on the Bay's edge. In concert with the Bay Trail, the plan provides for a ferry terminal at the Point Molate pier, with clustered public facilities and amenities to provide the necessary shoreside facilities and enhance the waterfront experience. Development along the shoreline will be clustered in designated areas, leaving the majority of the shoreline in a natural state. The city of Richmond Planning Commission and the Bureau of Indian Affairs (BIA) held a Scoping Meeting March 31, 2005, to discuss the development and

obtain public input. In 2009, the City released a Draft EIR. The City lists five “anticipated actions” (from www.ci.richmond.ca.us/index.aspx?NID=2304, viewed May 19, 2011).

- The San Francisco Bay RWQCB will issue a new order regarding cleanup.
- RWQCB approval will be sought for soil cleanup criteria and related plans.
- The BIA will issue a Restored Lands Determination decision.
- At least 3 public workshops will be held.
- The City will consider the EIR for certification.

San Francisco Bay Ferry Network

As provided by Assembly Bill (AB) 428, the San Francisco Bay Area Water Transit Authority (WTA) is currently considered in adoption of a San Francisco Bay Area water transit implementation and operations plan and will operate a comprehensive Bay Area regional public transit system. A Draft EIR was released in August 2002 (URS Corporation 2002a). Further planning, design, and environmental studies for first priority services and projects in partnership with local communities had begun. The first new ferry service dates are tentatively scheduled to occur between 2008 and 2010. In January 2008, the San Francisco Bay Area Water Emergency Transportation Authority (WETA) was created in order to create consolidated public ferry service in the Bay. As per Senate Bill (SB) 1093, WETA would consolidate city-owned ferry services, and transfers would be negotiated under WETA management. Additionally, ferry transit emergency response activities would be coordinated under WETA. Expansion of services, both for commuting and emergency services, is expected to be developed starting in 2010 (WETA website, www.watertransit.org 2009).

The WETA is considering expansion of the Bay's ferry service. Expansion of the ferry service may include several new routes. A route from Redwood City to Mission Bay and the Ferry Building in San Francisco would operate every 30 minutes using 150-passenger, 30-knot vessels. A new service from San Leandro to Redwood City would operate every 30 minutes and would connect the San Leandro Marina with the Port of Redwood City using 150 passenger, 35-knot vessels. San Francisco Airport would be connected to downtown San Francisco, Moffett Field, and Oakland International Airport at Moffett Field. This service would require dredging of Moffett Field and would operate every 20 minutes. A link would be established from downtown San Francisco to Moffett Field or the Port of Redwood City with downtown San Francisco and connecting services to the Oakland Airport for vessels dedicated for airport cargo only. Oyster Point Marina in South San Francisco would connect to the San Francisco Ferry Building with service every 15 minutes. By 2025, depending on the alternative selected, ferry trips crossing the Bay could exceed 1.2 million trips annually.

3.4.3 Regional Characteristics of Crude/Product Transportation in Bay and Along Coastal Shipping Lanes off Northern California

Many types of marine vessels call at terminals in the greater San Francisco Bay Area, including passenger vessels, cargo vessels, tankers, tow/tug vessels, dry cargo barges,

and tank barges. Several sources track vessel transits into the Bay, including the USACE, the Marine Exchange, the CSLC, and the USCG. These sources are generally limited to inbound/arrival information from outside to inside the Bay and do not include vessel transit information for transits originating in the Bay.

Table 3.4-1 presents information on only inbound vessel transits through the Golden Gate during 2003 and 2008 (USACE 2003, 2008). The number of outbound transits would essentially be the same. With the exception of San Francisco Harbor, these numbers do not reflect vessel traffic transits originating in the Bay. Excluding San Francisco Harbor, 31,184 vessels called at terminals in the San Francisco Bay Area in 2003, and 41,755 vessels called in 2008. Of these, 3,101 vessels called in the Carquinez Strait, which includes the general area of the Shell Terminal, in 2003, and 3,285 vessels called in 2008. The Marine Exchange of the San Francisco Bay Region also tracks ship movements—(inbound ships by vessel type). Over a 20-year period, the overall number of Golden Gate ship traffic arrivals has ranged from a low of 2,897 arrivals in 1997, to a high of 3,779 arrivals in 1984. The ratio of foreign to U.S. vessels has been increasing over the years and now ranges from approximately 35 to 40 percent U.S. to 65 to 60 percent foreign. “Shifts” included in Table 3.4-2 are those vessels that had movements from one part of the Bay to another.

Table 3.4-1. Inbound Vessel Traffic in San Francisco Bay (2003 & 2008)

Location	Self-Propelled Vessels		Non-Self Propelled Vessels			Total Number of Vessels
	Passenger & Dry Cargo	Tanker	Tow or Tug	Dry Cargo Barge	Tank Barge	
2003						
San Francisco Bay Entrance	2,455	730	424	16	306	3,931
San Francisco Harbor	34,230 ¹	16	542	161	67	35,016 ¹
Redwood City Harbor	29	-	110	8	-9	147
Oakland Harbor	9,218	3	1,401	262	352	11,236
Richmond Harbor	58	378	3,586	390	1,395	5,807
San Pablo Bay & Mare Island Strait	4,029	430	1,510	576	417	6,962
Carquinez Strait	254	416	1,602	511	318	3,101
Totals	16,043 ²	1,957	8,633	1,763	2,788	31,184 ²
2008						
San Francisco Bay Entrance	2,561	810	286	19	320	3,996
San Francisco Harbor	55,390 ¹	4	612	171	67	56,244 ¹
Redwood City Harbor	36	-	165	15	-	216
Oakland Harbor	12,523	28	1,876	325	633	15,385
Richmond Harbor	113	433	4,847	142	1,092	6,627
San Pablo Bay & Mare Island Strait	9,564	409	1,434	481	358	12,246
Carquinez Strait	957	392	1,362	282	292	3,285
Totals	25,754 ²	2,072	9,970	1,264	2,695	41,755 ²
Notes:						
¹ Number of passenger and cargo vessels in Harbor reflects vessel traffic generated within the Bay, thus numbers shown exceed the number of vessels at the San Francisco Bay Entrance.						
² Total excludes San Francisco Harbor passenger and cargo.						
Sources: USACE 2003 & 2008. Waterborne Commerce of the United States Calendar Year 2003 Part 4- Waterways and Harbors Pacific Coast, Alaska, and Hawaii.						
* Data from 2008 (first full year available prior to release of the Draft EIR) are provided for comparison purposes.						

Table 3.4-2. Golden Gate Ship Traffic Destination of Golden Gate Arrivals 2001 and 2008, Including Shifts

Destination	Total 2001	Total 2008*
Anchorage (6)	971	1,106
Oakland	1,856	1,938
North Bay Area	663	817
Antioch	10	8
Benicia	187	317
Concord NWS	2	26
Crocket Sugar	25	26
Martinez	254	282
Pittsburgh	47	65
San Pablo Bay	137	Data not available
Redwood City	35	54
Richmond	624	722
Rodeo	Data not available	119
Sacramento	81	55
San Francisco	202	126
Stockton	143	166
Total	5,235	5,801
Source: Marine Exchange, 2001 and 2008. * Data from 2008 are provided for comparison purposes.		

Shifts have remained fairly constant over the past 4-year period from 2001-2005, in the range of approximately 5,000 vessel movements. Of six anchorages located in the Bay, Anchorage 9, located south of the Bay Bridge between San Francisco and Oakland had the majority of arrivals at 710 of the total 971 arrivals. Some tankers bound for the Shell Terminal occasionally transfer oil from one vessel to another (lighter) at Anchorage 9 which reduces the draft of the vessel prior to travel to its destination. Over the past approximately six years, Shell has had approximately 2 vessels lighter at Anchorage 9. Shell Terminal bound vessels typically do not lighter in the Bay due to draft restrictions by the Pinole Shoal (32.5-foot MLLW plus or minus the tide at transiting time to allow at least 2 feet of underkeel clearance). However, in the future, during the proposed lease term, an increase in lightering for Shell Martinez-bound vessels may occur.

Vessels entering and leaving the Golden Gate entrance to San Francisco Bay do so through the Traffic Separation Scheme which consists of a circular Precautionary Area with three traffic lanes (northern, main or western, and southern) exiting from the Precautionary Area. A detailed description of the regulated navigation areas is presented in Section 4.1 in the Operational Safety/Risk baseline conditions discussion.

The CSLC Marine Facilities Division in Hercules also tracks ship and barge calls to those marine terminals for which they have jurisdiction. Table 3.4-3 presents those numbers for 2004 and 2008. The 2008 data show an increase in 22 total vessel calls to the Shell Terminal. The anticipated vessel increase over a 30-year lease term is from 196 to 330 vessels per year, as analyzed in this EIR. Table 3.4-4 presents information on tanker origins and destinations and travel distances offshore of the California coastline when calling at terminals in the San Francisco Bay. These data are based on a USCG and National Oceanic and Atmospheric Administration (NOAA)

special report to Congress and confirmed by recent data from the Marine Exchange. Vessels carrying crude are separated from vessels carrying products because product carriers sometimes transit closer to shore.

Table 3.4-3. Vessel Calls to Marine Oil Terminals in the San Francisco Bay in 2004 & 2008

	Marine Oil Terminals	Vessels	Barges	Total
2003	Shell Oil, Martinez	55	120	175
	G.P. Resources	0	6	6
	Tesoro Amorco	88	0	88
	Tesoro Avon	41	87	128
	ConcocoPhillips, Rodeo	26	232	258
	Pacific Atlantic Plains Products Terminals LLC, Martinez	50	143	193
	Shore, Selby	24	31	55
	Chevron Long Wharf, Richmond	368	398	770*
	BP West Coast, Richmond	1	22	23
	Pacific Atlantic Plains Products Terminals LLC, Richmond	3	343	346
	BP Lubricants	0	12	12
	Kinder Morgan, Richmond	18	0	18
	IMTT, Richmond	26	451	604*
	ConcocoPhillips, Richmond	0	31	31
	Valero, Benicia	96	69	164*
	Total all Terminals	796	1,945	2,871**
2008	Shell Oil, Martinez	67	130	197
	G.P. Resources	3	60	63
	Tesoro Amorco	82	3	85
	Tesoro Avon	30	80	110
	ConcocoPhillips, Rodeo	77	179	256
	Plains Products Terminals LLC, Martinez	87	119	206
	Shore, Selby	34	24	58
	Chevron Long Wharf, Richmond	410	370	780
	BP West Coast, Richmond	22	8	30
	Plains Products Terminals LLC, Richmond	10	333	343
	BP Lubricants	0	12	12
	Kinder Morgan, Richmond	5	0	5
	IMTT, Richmond	5	443	532*
	ConcocoPhillips, Richmond	0	177	177
	Valero, Benicia	134	22	156
	Total all Terminals	966	1,960	3,010***
Notes:				
* Includes other types of vessels.				
** Total includes 127 tugs not included in the vessels or barges categories.				
*** Total includes 84 tugs not included in the vessels or barges categories.				
Source: California State Lands Commission, Marine Facilities Division, 2005, 2009. 2008 data are provided for comparison purposes.				

Table 3.4-4. Tanker Origin/Destination From/To San Francisco Bay and Distance Traveled From Coast

Origin	Destination	Typical Distance From Coast (miles)
Alaska	SF Bay	50+
Canada	SF Bay	25+
Oregon/Washington	SF Bay	25+
Asia/Hawaii	SF Bay	NA
Los Angeles	SF Bay	25+
Mexico/Panama/South America	SF Bay	10+
SF Bay	Oregon/Washington	25+
SF Bay	Humboldt Bay	25+
SF Bay	Asia/Hawaii	NA
SF Bay	Port San Luis	10+
SF Bay	Los Angeles	50+ ANS crude; 25+ other crude and products
SF Bay	Mexico/Panama/South America	25+

Sources: USCG and NOAA, ~~undated~~ 1997. Report to Congress on Regulating Vessel Traffic in the Monterey Bay National Marine Sanctuary as Required by Public Laws 102-368 and 102-587. San Francisco Bay Region Marine Exchange, 2002.

Imported cargo and associated vessel calls are expected to triple from 1995 to 2020 (LTMS-USACE, EPA, BCDC, SFBWQCB, and SWRCB 1998). Numbers taken from the Seaport Plan (BCDC and MTC 1997) show a projected increase from approximately 15 million metric tons to 44 million metric tons during this timeframe. The number of vessels is hard to estimate, as in the future, larger vessels will carry greater quantities of cargo than at present. The projected estimates reflect general cargo ports and terminals; commodities handled at proprietary terminals (including the Shell Terminal) are not included in the projections.

In 1992, after consultation with the OSPR and the USCG, 10 major oil company members of the Western States Petroleum Association (WSPA) reached agreement on the routing of tankers carrying Alaskan North Slope crude to California ports, committing their laden tankers to remain at least 50 miles seaward of the California coast while transiting the coastline. Although tankers carrying refined petroleum products along the west coast are not subject to the WSPA agreement, a 1994 WSPA study based on interviews with its members determined that almost 90 percent of all tanker traffic is at least 25 miles offshore and nearly 50 percent are 50 miles offshore.

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